Congressional Notification Profile

DEEP TREK PROGRAM SOLICITATION

PINNACLE TECHNOLOGIES, INC.

Background and Technical Information: Research entitled "Stimulation Technology for Deep Well Completions."

This project will review current and past stimulation techniques for deep-well completions to develop data that help minimize the uncertainty of and increase the success in drilling into deep formations. Information will be obtained through literature reviews, interviews with operators, service companies and consultants, evaluations of rock mechanics and fracture growth in deep formations and assessments of stimulation techniques in three to five gas wells. A comprehensive report will be assembled and given to the gas industry through publications and workshops.

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Congressional District: 8th District County: San Francisco

Financial Information:

Length of Contract (months): 12 months*
Government Share: $ 180,000*
Total value of contract: $ 225,000*

*Reflective of Phase 1 only.

DOE Funding Breakdown:
Funds: Phase 1 $ 180,000
Funds: Phase 2 $ Unknown
Funds: Phase 3 $ Unknown

Public Abstract
Project Title: Stimulation Technology for Deep Well Completions

Introduction - In order to meet projected demand for natural gas it will be necessary to develop resources found in deep formations. Natural gas production from deep formations is expected to double by 2010 according to EIA estimates. Unfortunately, the economics for developing deep formations make this a formidable task. The Department of Energy's (DOE) Deep Trek Program is targeted to improving the economics of drilling and completing deep wells. This project is focused on the second objective of the Deep Trek program, "Improved Economics In Deep Well Completions." The deep reservoirs that will be exploited in the future will typically be low permeability, high temperature and pressure, perhaps abnormally pressured and contain contaminants including carbon dioxide and hydrogen sulfide. The high cost of drilling and completing these wells will require that maximum effort be made to enhance production and recovery in order that these wells are economic. Therefore, these wells will require some type of stimulation, probably hydraulic fracturing, in order to be economic.

Research Objectives - The objective of the proposed research is to review current and past stimulation activity and research results for deep well completions and develop information for industry that will help reduce uncertainty and increase success in frontier and emerging deep formation plays. The project will provide industry with an assessment of 1) what is currently working in deep formation stimulation 2) what is currently not working in deep formation stimulation and 3) what needs improvement in deep formation stimulation.

Project Plan - The project focuses on three major areas. First, evaluate the current state-of-the-art in stimulation technology and identify key stimulation issues for deep gas wells. This will be accomplished through a comprehensive literature review and interviews with operators, service companies and consultants. Second, evaluate rock mechanic and fracture growth behavior in deep formations. The nature of deep reservoirs can result in very complex hydraulic fracture growth and production behavior due to the complex stress regimes and the large component of stress that is initially supported by the high reservoir pressure. Third, evaluate in detail the performance of stimulation techniques in three to five deep gas plays. Drilling, completion, stimulation, production, and geological data will be obtained from operators and comprehensive assessment of current and past stimulation practices will be conducted. The results of the project will be documented in a comprehensive report and transferred to industry through publications and workshops.

Performing Organization - Pinnacle is a rapidly growing company consisting of over 50 engineers and support staff located in offices in Houston, Denver, San Francisco, Bakersfield, and The Netherlands. Pinnacle provides a unique combination of fracture engineering, reservoir engineering, fracture modeling and fracture diagnostic services that allows us to continually improve our understanding of unconventional reservoirs and hydraulic fracturing.